the central spindle during division as in Noctiluca and many Metazoa. A distinct centrosome was found only in Noctiluca. The nuclei of most Protozoa belong, however, to aberrant types, which seem to have developed along divergent paths and only remotely resemble the more primitive forms on the one hand and the higher forms on the other. Examples of these aberrant types are found in *Amœba proteus*, Ceratium, Noctiluca, and the Infusoria in general. Chromosome formation is first seen in flagellates in the form of rods which arise by the union of the scattered chromatin granules. They form in the typical, though primitive, metazoan manner in Noctiluca and Euglypha, and all metazoan cells pass through these stages in preparing for mitosis.

C. A. K.

The Plotting of Biological Data in which it is necessary to exhibit an enormous range of numbers, as, for example, in certain lines of plankton work, presents a practical difficulty which may be obviated by a simple method suggested by Mr. D. J. Scourfield.[1] This is the use of logarithmically ruled paper, or of ordinary cross-section paper by the assignment of suitable values to the lines. Thus millimeter paper may be used if the centimeter lines are held to represent 1, 10, 100, 1000, etc., and the intermediate millimeter lines are given the numerical values whose logarithms are 0.1, 0.2, 0.3, 0.4, etc. For ordinary biological data, logarithmic ruling in one direction only is required, though for certain problems, *e.g.*, the plotting of variations of a rapidly increasing number of organisms, paper ruled in this manner in both directions might be used. This method of graphic presentation of biological statistics has the additional advantage of exhibiting *proportionate* changes in numbers by lines having the same angle of slope wherever situated in the chart.

C. A. K.

ZOÖLOGY.

Relationships of North American Grouse and Quail. — Dr. H. L. Clark has just published one of his useful papers on the feather-tracts of birds; in this case on those of the North American grouse and quail. The work of Nitzsch is thus carried on and[2] extended,

[1] Scourfield, D. J. The Logarithmic Plotting of Certain Biological Data, *Journ. Quek. Micr. Club*, Ser. II, vol. iv (1897), pp. 419–423, Pl. XX.

[2] Clark, Hubert Lyman, Ph.D., Instructor in Zoology, Amherst College. The